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European Corn Borer: Pest Management by Integrating Scouting Computer Software, and Insecticides

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EUROPEAN CORN BORER: PEST MANAGEMENT BY INTEGRATING SCOUTING COMPUTER SOFTWARE, AND INSECTICIDES

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A computer program, known as **the European corn borer - phenology and management software**, was recently developed for use in Iowa. The software is designed to perform three different operations: 1) to analyze the costs of an insecticide application for first generation European corn borer control and determine if this management activity is potentially profitable, 2) to predict the dates when second generation European corn borer eggs will be laid and suggest a time period for scouting, and 3) to compare the economic costs versus the benefits of making an insecticide application for control of second generation European corn borers. The software is user friendly and is designed for use by farmers, crop consultants, vo-ag instructors, extension agriculturists, ag-chem dealers, or anyone else with a desire to better manage European corn borers. The software comes with an instructional guide that completely explains how to use the program. A brief description of the software program is given below.

First Generation Management. To effectively and economically manage first generation corn borers, fields must be scouted, the treatment economics must be analyzed, and an insecticide must be applied (if needed) before the larvae begin boring into the plant. After a field is scouted, the number of larvae that are found are entered into the computer. The software then asks for the following information: plant growth stage of the crop, expected grain yield per acre, expected market value per bushel, expected percentage control if an insecticide was applied, insecticide cost, application cost, and number of treatment applications. The software then calculates the expected dollar loss, based on the number of larvae per plant, the plant stage (the smaller the plants, the greater the yield loss), and the expected value of the crop per acre. These values are used to determine if the benefits of an insecticide exceed the value of crop loss and application costs. The software then projects a potential dollar benefit or loss based upon the numbers entered into the program.

Predicting Second Generation Egg Laying. Larvae from the first generation will eventually develop into moths and lay the eggs of the second generation. First generation larvae can be collected, their age determined based upon their size (see chart), and this information is then entered into the computer program. Daily high and low temperatures are then used to predict when the larvae will become moths and lay eggs. The software provides dates when 5%, 25%, 50%, 75%, and 95% egg laying will occur. The predictions help pinpoint when scouting should be done. Scouting is suggested between the 25% and 50% egg-laying dates.

Second Generation Management. The corn field must be scouted for second generation corn borer eggs before the second generation management program can provide a control recommendation. The following information is required to determine the economic benefits of an insecticide application: date when the field was scouted, number of egg masses observed, corn growth stage, date when corn first reached this growth stage, number of days required for crop to reach physiological maturity, number of eggs per egg mass (an average number is provided if you don't want to count eggs), estimated larval survivorship (again, a number based upon research is provided in the program), estimated yield in the absence of corn borers, corn selling price, estimated mortality of corn borers if an insecticide is applied, insecticide cost, application cost, and number of applications. After this information is entered, the software quickly provides a recommendation either to spray or not to spray the field and calculates an estimated dollar gain or dollar loss per acre.

Software Benefits. The benefits of using this software are twofold. First, the costs of management are easily calculated to help you determine if an insecticide application will provide a potential economic return for either first or second generation corn borers. Second, the software predicts when fields should be scouted for second generation problems. With this software, second generation corn borers no longer need to be ignored because they can be more efficiently scouted and the control costs and benefits can be determined.

Ordering Information. This software runs on IBM and compatible computers with at least one floppy drive. It is available for $75 and may be ordered from Extension Software Service, 108 Atanasoff Hall, Iowa State University, Ames, IA